MC generation for the B group

Aim:

generation of large MC samples of

- "Generic" b production, un-decayed
- "Specific" samples of bb / (cc) hadronic triggers (***full simulation***)
  - Generator: PYTHIA
  - Decayer: QQ
  - ***Realistic simulation***
- Use dedicated cdfa (UK)
  (fcdflnx2 equivalent)

MC generation for the B group

- Use realistic detector configuration for:
  - Silicon
  - Trigger (SVT)
- Use realistic beam and alignment configuration

Were are we:

- Any run can be simulated one at the time (4.8.4pre2)
- SVT auto-beamline parameters only for 142110 ← simulate this.
- SW is a moving target:
  - Surprise ! 4.8.4pre2 no longer there !
- Validation of results: non existent !
  - → “are these samples needed ?”

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- News and status on web page:

`http://www-cdf.fnal.gov/internal/people/links/SaverioDAuria/mc_status_bb.html`

- 33 k events fully simulated (3 days on dedicated cdfa) and production 4.8.4pre2 ran with single branch output→ good with new sw releases. This is 1/3 of the 100k test. Need to be validated:
  - At low level: SiliMon (Saverio)→ Silicon coverage
  - Low level: beam line position ???
  - At physics level: ????

  Data are rootd-accessible in
  `fcdfdata007:`
  `~dauria/scratch/pythia_bb_prod_205_*.prod`

- Corrections and upgrades for next 33k test using 4.8.5pre1:
  - Pythia CTEQ5L instead of CTEQ3L (modifies the underlying event)
  - Displaced vertex using DB and GenPrimVertMods
  - Multiple run numbers in same job.
  - Force alignment pick up in Simulation (for TrigSim)
  - Use an updated QQ decay table

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Problems with 4.5.4pre2:

- SiliconSimulation core dumps once in 30k events:

```
svx::PhysicalDepositionModel::makeHitsthis=0x
273bb888,__368765_59_ed=0x28 abf10,
__368766_25_stepinfo=0x270adbe0,
__368767_36_de=0x25e67520,
__368768_26_tg=0x264175a0) at
/home/cdfsoft/dist/packages/SvxSim/V00-00-
86/src/PhysicalDepositionModel.cc:465
```

- Alignment constants were not picked up in Simulation → need to correct Production.
- Silicon hits are associated with tracks that don't cross that silicon ladder (see plot)
- Why only 14% of Silicon clusters are used in reconstructed tracks ? (could not check what is in data SiliMon crashed)
- No multi-run per job.